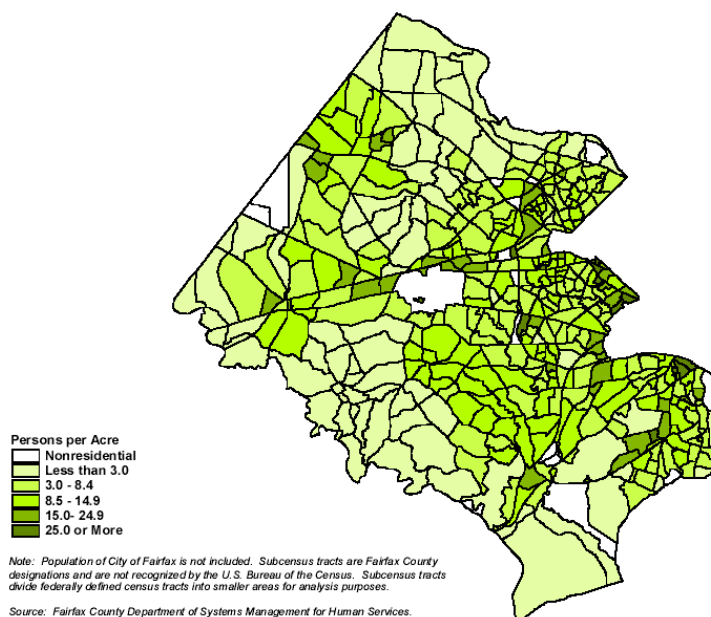


Figure 2-5. Fairfax County Population Density, 2002



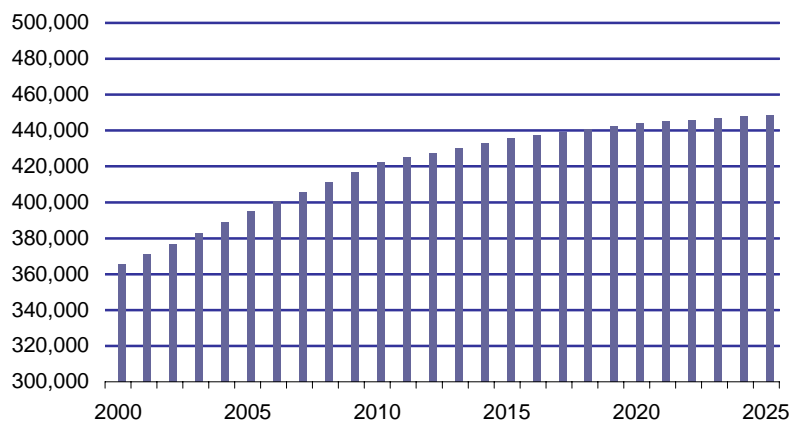
Fairfax County projects that its households will grow by more than 75,000 over the next 20 years.

Household Forecasts

In 2000, Fairfax County counted 353,100 households within its borders. The City of Fairfax counted 8,035 households, and the City of Falls Church counted 4,471 households. The county projects that the number of households will increase through 2025 at roughly the same annual rate as the population (discussed above). Figure 2-6 shows the county's estimate of total households through 2025.



Figure 2-6. Fairfax County Total Households, Projected 2000–2025



Note: Includes the Towns of Vienna, Clifton, and Herndon and Cities of Fairfax and Falls Church.
Sources: Fairfax County Department of Systems Management for Human Services, 2001 Metropolitan Washington Council of Governments, Round 6.2 Cooperative Intermediate Forecasts.

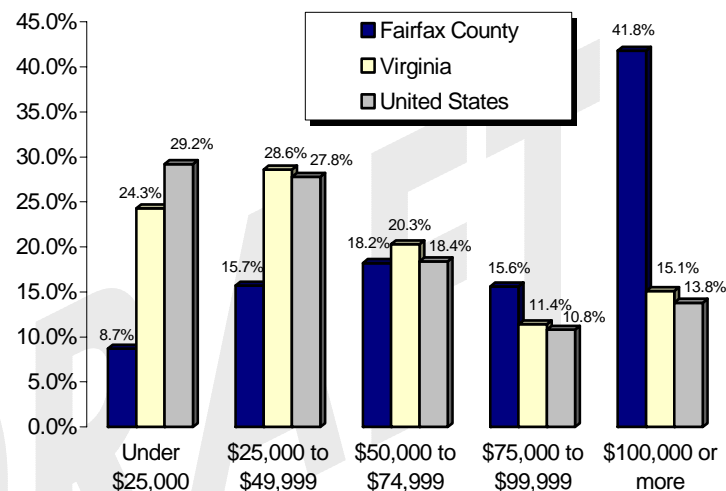
In 2000, the average household size in Fairfax County was 2.71 persons.

In the U.S. Census 2000, the average household size in Fairfax County was 2.71 persons, larger than the national average of 2.59 and Virginia average of 2.54.

Household Income Distribution

Fairfax County is one of the wealthiest counties in the country. The county's 2001 median household income of \$84,683 is more than twice that of the United States (\$42,228) and 73 percent more than that of Virginia (\$49,085). Figure 2-7 shows the distribution of incomes in Fairfax County and the United States in 2001.

Figure 2-7. Fairfax County and U.S. Income Distribution, 2001



Source: U.S. Census Bureau.

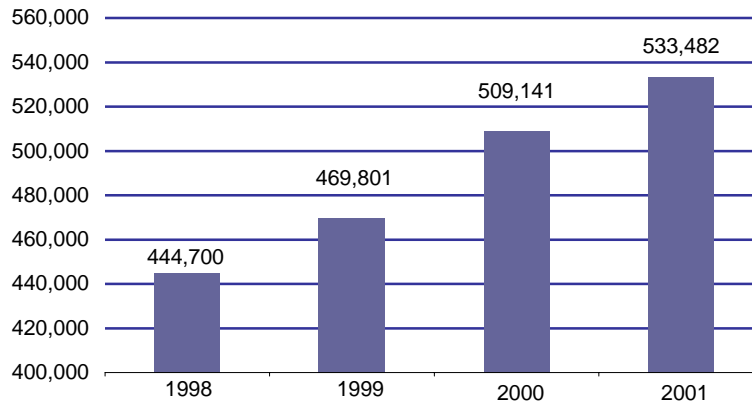
Employment

Fairfax County is a major employment center; employment growth has recently accelerated rapidly.



Fairfax County is home to an extensive commercial office market and is a major employment center. In 2001, more than 25,800 establishments in the county employed more than 533,400 people. Employment growth in the county has accelerated rapidly between 1998 and 2001, as shown in Figure 2-8.

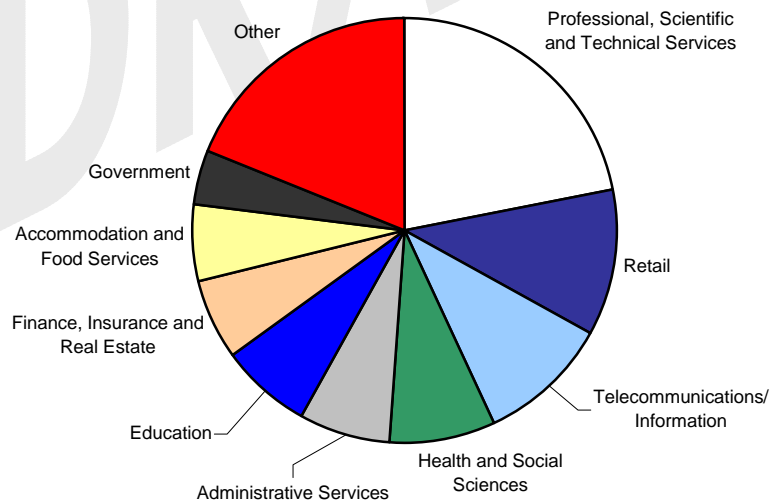
Figure 2-8. Fairfax County Employment, 1998–2001



Source: U.S. Census Bureau County Business Patterns.

Fairfax County's workforce is both highly trained and educated. The major businesses in the county consist of government, defense, information technology, software, Internet, e-commerce, telecommunications, and aerospace firms. Employers within the county include corporate and regional headquarters, government contractors, trade and professional associations, retail firms, wholesale distributors, and business and financial services. Figure 2-9 shows a breakdown of employment in Fairfax County by industry.

Figure 2-9. Employment in Fairfax County by Industry



Source: Virginia Employment Commission, 2001.

Within the county, businesses range from small entrepreneurial startups to multi-billion dollar enterprises. The county hosts six Fortune 500

headquarters, more than 230 foreign-owned firms, and more than 4,000 technology firms. The majority of businesses in the county, however, are small and locally owned; 97 percent employ fewer than 100 employees or post revenues under \$1 million.

The employment characteristics of the Cities of Fairfax and Falls Church are similar to Fairfax County. In 2000, the number of jobs in the City of Fairfax was 30,800 and in the City of Falls Church 9,400.

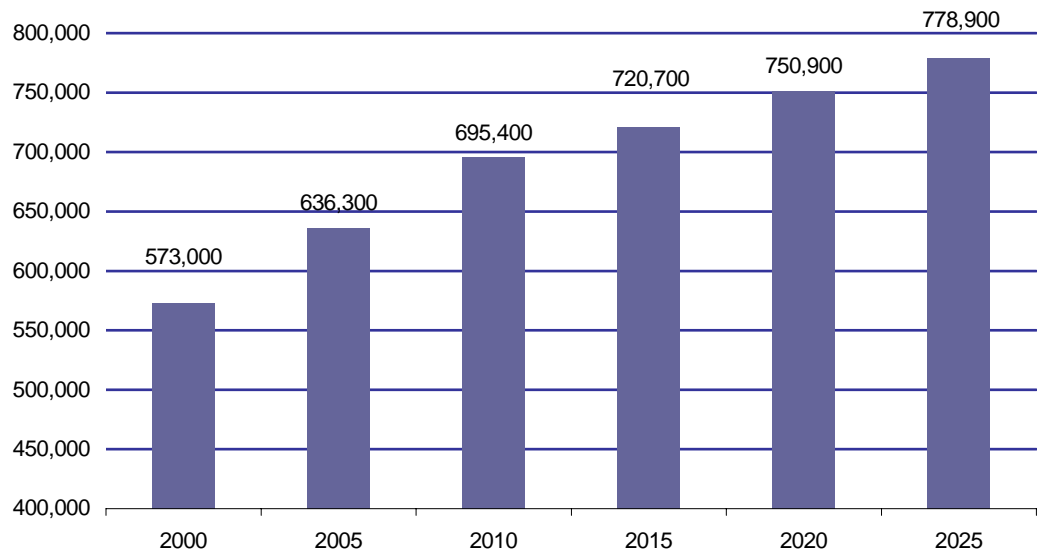
Since the county predicts employment growth to outpace population growth, commercial waste will likely increase as a percentage of the total waste stream.

Employment Forecasts

The Metropolitan Washington Council of Governments (MWCOC) expects employment in Fairfax County to grow over 38 percent between 2000 and 2025. Therefore, employment is predicted to outpace the growth of population in the county (22 percent) over the same period. As a result, Fairfax County will likely experience an increase in commercial waste as a percentage of the total MSW stream over the next 20 years.

Employment growth in the cities is expected to be much less than the overall growth for Fairfax County. Employment in the City of Fairfax is projected to increase by 6 percent and in the City of Falls Church by 3 percent from 2000 to 2025. Figure 2-10 shows the employment projections for the Fairfax County service area from 2000 to 2025.

Figure 2-10. Fairfax County Employment Projections, 2000–2025



Source: Metropolitan Washington Council of Governments, Round 6.3 Cooperative Intermediate Forecast, 3/03

Composition of Solid Waste

MSW

MSW includes rubbish, trash, and garbage produced by households, apartment buildings, hotels, motels, businesses, industry, and institutions.



The MSW stream's plastic component has been increasing and the paper component decreasing over the last five years.

Waste Generation Activities

MSW includes solid waste generated by residential, commercial, industrial, and institutional establishments. This includes rubbish, trash, and garbage produced by households, apartment buildings, hotels and motels, and businesses, including offices, stores, restaurants, and institutions such as schools and hospitals. Fairfax County does not track waste receipts based on residential, commercial, industrial, or institutional origin; therefore, the plan used data representing the combined MSW stream to develop the future projections in this section. The MSW totals *include* yard wastes and certain special wastes described further in this chapter, such as used oil, antifreeze, tires, batteries, and household hazardous waste (HHW).

Waste Stream Material Types

1990 Municipal Waste Composition Study Data

In 1990, the county studied its municipal waste composition to estimate the percentages of specific material types in the waste stream. It categorized 100 representative samples during August and November and manually sorted them into 35 refuse categories. The study determined that 76 percent of the MSW stream in the county is made up of paper (44 percent) and organics (32 percent), including yard waste. The remainder of the waste stream includes plastic (9 percent), glass (6 percent), and metals (6 percent). Appendix B shows the results of the study.

2000 EPA National Municipal Waste Composition Data

With the increase of plastics over the last decade, the 1990 waste characterization data does not accurately represent the county's current waste stream. The best available characterization data for the county's current waste stream is the recent national solid waste composition data in the U.S. Environmental Protection Agency (EPA) biennial survey report *Municipal Solid Waste in the United States: 2000 Facts and Figures*. (Table 2-3 shows the waste composition characterization from this study.)

Table 2-3 also presents the 1995 EPA data to illustrate the changing composition of MSW. The MSW stream's plastic component has been increasing over the last five years (10.7 compared with 8.9 percent), while the paper component has been decreasing (37.4 compared with 38.6 percent).

Table 2-3. Fairfax County Waste Stream Composition (%)

Category	2000 EPA mean	1995 EPA mean
Paper	37.4	38.6
Plastic	10.7	8.9
Yard waste	12.0	14.0
Organics	23.4	21.6
Glass	5.5	6.1
Aluminum	1.4	1.4
Ferrous metals	5.8	5.5
Misc. Inorganics	1.5	1.5
Other waste	1.7	1.7

Source: EPA, 2002.

Paper and organics (lumber, textiles, diapers, food waste, etc.) represent the largest components of MSW

Residential and Commercial Waste Percentages

The county estimates that residential sources generate 45 percent and commercial sources (businesses, institutions, and industries) generate 55 percent of the waste stream.

Fairfax County estimates that 45 percent of its current MSW stream is generated by residential sources and 55 percent is generated by commercial sources, including businesses, institutions and industries. Wastes generated by these sources have similar components:

Residential. Single- and multi-family homes.	Newspapers, clothing, disposable tableware, food packaging, cans and bottles, food scraps, and yard trimmings
Commercial. Office buildings, retail and wholesale establishments, and restaurants.	Corrugated boxes, food wastes, office papers, disposable tableware, paper napkins, yard trimmings
Institutional. Schools, libraries, hospitals, and prisons.	Cafeteria and restroom trashcan wastes, office papers, classroom wastes, and yard trimmings
Industrial. Packaging and administrative (not process wastes).	Corrugated boxes, plastic film, wood pallets, lunchroom wastes, and office papers



The average county MSW generation over the last three years is 6.30 pounds per capita per day.

These statistics correlate well with national waste percentages; for example, the national EPA survey estimates that in 2000, the breakdown of MSW generation was 55 to 65 percent from residential sources and 35 to 45 percent from commercial. A recent study by MWCOG found that 46 percent of MSW disposed of in the Washington area (which includes Fairfax County) was generated by residences and 54 percent by commercial sources.

Waste Generation Rates

Fairfax County compiled its data from county weight scale records and recycling reports for 2000, 2001, and 2002 to determine the county MSW per capita generation rate (including the cities and towns) for each year (see Table 2-4). The county calculated the total waste generation by adding the county waste disposed of and recycling totals for each year. The average county waste generation over the last three years is 6.30 pounds per capita per day (pcd).

Table 2-4. Recent Fairfax County MSW Generation Rate Data

Year	Waste disposal (tons) ^a	Recycling (tons)	Total generation (tons)	Population	MSW generation rate (pcd)
2000	677,300	405,539	1,082,839	1,001,624	5.92
2001	807,842	401,368	1,209,210	1,016,406	6.52
2002	830,602	386,019	1,216,621	1,032,205	6.46
Average					6.30

^aThe county weight scale records identify the annual quantity of county MSW delivered to the Energy/Resource Recovery Facility (E/RRF) or diverted to landfills. The sum of these two numbers, minus metals recovered by the E/RRF (adjusted for Fairfax County percentage), provides the best available estimate of annual county waste disposal.

Formulas:

$Waste\ disposal\ (tons/yr) + recycling\ (tons/yr) = total\ waste\ generation\ (tons/yr)$

$Waste\ generation\ (pounds)\ per\ capita\ per\ day\ (pcd) = total\ waste\ generation\ (tons/yr)^*$

*365 days/yr divided by Population (2,000 pounds = 1 ton)

The average MSW generation rate in Fairfax County of 6.30 pcd is further supported by data provided by a major private hauler in the county. The hauler data suggests that a typical household generates approximately 42 pounds of solid waste for disposal and 11 pounds of recyclables (including yard waste) per week. Assuming an average household has 2.7 persons, this equates to a residential waste generation rate of 2.8 pcd. Based on these data and an estimated residential fraction of the waste of 45 percent, the calculated county MSW generation rate would be 6.22 pcd.

County collection route data also support the county's calculated MSW generation rate. For households that have county-provided collection services, the average residential waste generation rate is 3.09 pcd. Based on these data and an estimated residential fraction of the waste of 45 percent, the calculated county MSW generation rate would be 6.82 pcd.

Recycling data

In recent years, the county MSW recycling rate has ranged from 32.0 to 35.6 percent.

The annual county recycling reports calculate total recycling tonnage for each calendar year. Table 2-5 summarizes county recycling totals for 2000 through 2002. Recycling data include residential and commercial recyclables, yard waste, special waste recyclables, and metals recovered by the waste-to-energy facility in Fairfax County, the Energy/Resource Recovery Facility (E/RRF).

